

May 2, 2006

SOUNDBITES AND B-ROLL

C.W. Bill Young Center for
Biodefense and Emerging Infectious Diseases (Building 33)

National Institute of Allergy and Infectious Diseases (NIAID)
National Institutes of Health (NIH)
Bethesda, MD

Total Running Time: 20:55

SOUNDBITES

1. Anthony S. Fauci, M.D., Director
National Institute of Allergy and Infectious Diseases
2. Kathryn C. Zoon, Ph.D., Director
Division of Intramural Research
National Institute of Allergy and Infectious Diseases

B-ROLL

Biosafety Level 2 (BSL-2) Laboratory

- Typical day at the lab bench and biosafety cabinet (in the back). Note, everyone is wearing a lab coat and gloves. There is no eating or drinking in the lab area.
- Researcher uses a multi-channel pipette to fill the wells of a tissue culture plate.
- Researcher uses a microscope to examine and count bacterial colonies on an agar plate.
- Researcher prepares tubes (known as cryotubes) to be used to cryopreserve DNA samples.
- Researcher uses pipette to fill tubes with DNA samples that will be cryogenically preserved.
- Cryotubes are placed on dry ice to flash-freeze the DNA. Tubes will then be moved to the freezer.
- Researcher working at a biosafety cabinet harvests virus using a blue scraper to remove the single layer of cells (the monolayer) from the surface of a tissue culture flask. Virus work is usually performed in a biosafety cabinet to maintain a sterile work area. The inside of a biosafety cabinet provides a sterile environment so that the tissue culture does not become contaminated; the biosafety cabinet also serves as the primary containment for infectious virus. The red fluid is tissue culture medium used to grow cells.
- The researcher manipulates a stack of three tissue culture flasks used to grow virus. Each flask contains a single layer of cells and tissue culture medium, which provides nutrients to the cells. The cell monolayer has been infected with virus and the researcher rocks the flasks from side to side and top to bottom to ensure that the virus is well dispersed on the cell monolayer. The flasks will be placed in an incubator for several days before virus can be harvested.
- Team area adjacent to the BSL-2 laboratory. The lab group discusses the ongoing project and shares data.

Biosafety Level 3 (BSL-3) Laboratory

- Researcher approaches entrance to the anteroom (airlock area) of a BSL-3 laboratory.
- Before entering the airlock area, the researcher verifies that the air pressure is negative inside the anteroom. Negative pressure means that air flows into the airlock from the corridor, thereby preventing the escape of any airborne pathogens.
- In the airlock area of the BSL-3 laboratory, researchers dress in protective clothing, also called personal protective equipment (PPE). Protective clothing must be donned prior to entering the BSL-3 laboratory. Protective clothing generally includes a Tyvek suit, shoe covers, hair bonnet, 2 pairs of gloves, and a respiratory hood (also called a positive air pressure respirator, or PAPR) connected to an air pump that contains a high-energy particulate air (HEPA) filter. Key card access is required to enter the laboratory.

- In the BSL-3 laboratory, researchers conduct experiments with pathogens in biosafety cabinets. Work can be performed on the benchtop when there is no pathogen, or when the pathogen is in an enclosed container. Here a researcher prepares virus in the biosafety cabinet and a researcher uses a microscope to look at cells in a tissue culture plate. Since laboratory notebooks are not taken out of the laboratory, a fax machine is used to send data out of the BSL-3 laboratory.
- Researcher uses a microscope to examine cells in a 96-well tissue culture plate.
- Researcher prepares virus dilutions in a biosafety cabinet using a multi-channel pipettor.

Interstitial Space

- Space dedicated to electrical, mechanical, plumbing, and telecommunications support is located above each occupied floor. This interstitial space allows adequate room for preventative maintenance and routine monitoring to occur without disturbing laboratory activities.
- Building engineers conduct routine inspections of mechanical space to ensure proper performance of equipment.
- Building engineers monitor integral systems to detect and identify abnormalities before they become problems.
- Building engineers regularly inspect the high efficiency particulate air (HEPA) filters as part of the heating, ventilation, and air conditioning system required for BSL-2 and BSL-3 laboratory facilities.

Vivarium

- The cagewash specialist removes an animal holding rack following a sterilization process out of the animal BSL-3 laboratory suite. The equipment is hot, and therefore the specialist wears heavy protective gloves that inhibit burns to hands and arms. The specialist is wearing other protective clothing that also minimizes cross-contamination to the equipment. The specialist is not in a BSL-3 laboratory and thus is not required to wear the personal protective clothing and equipment of those in such a laboratory.
- Following autoclaving of the equipment out of the animal BSL-3 laboratory suite, the animal holding rack is processed further. The rack is sprayed with high-pressure hot water in a designated area. This procedure is performed to remove large pieces of bedding or other material that may have been baked on during the autoclave process.
- The cagewash specialist is wearing protective clothing during high-pressure hot water spray procedure. Note the protective lab coat, hair bonnet, and face shield integrated into the face mask for eye protection and mucous membrane protection.
- Equipment is placed into the rack washer.
- After the equipment is sprayed with high-pressure hot water, the animal holding rack is processed in a rack washer. The rack washer cleans and sanitizes the equipment for placement back into the animal BSL-3 laboratory suite for holding animals again. The animal holding rack is removed from the rack washer.
- Small animal cages are cleaned and sanitized using a high-throughput tunnel washer. The tunnel washer uses special cleaning detergents and has a dryer so the cages can be made ready for set up and placement back into circulation.
- Vivarium staff members don protective clothing and equipment providing a safe working environment while in the animal BSL-3 laboratory suite. Gloves are taped to wrists to inhibit gloves from slipping off the coverall suit. HEPA filter units are strapped around the waist of each staff member, providing fresh filtered air to the individuals. Filtered air is delivered from the fan unit, through the black hose, and up to the hood bonnet, where the air is delivered to the individual.
- Double-gloving minimizes any chance of breaching the personal protective barrier and inhibits cross-contamination while in the animal BSL-3 laboratory suite. Verbal cues and cross checks are exchanged between personnel prior to entering the BSL-3 laboratory suite. Cross checks and standard operating procedures help ensure a safe working environment.

- After small animals are given a clean cage, bedding, food, and water, the used cages are placed on a bulk transfer cart to efficiently move the equipment to the autoclave. Personnel are wearing personnel protective clothing and equipment suitable for animal BSL-3 laboratory work. The bulk transfer cart is loaded into the autoclave for equipment sterilization and subsequent removal from the BSL-3 laboratory suite.
- Once the bulk transfer cart is loaded into the autoclave, personnel initiate the sterilization process through an automated touch pad screen.
- Personnel initiate the sterilization process by selecting the appropriate sterilization cycle. The autoclave door closes and seals prior to initiation of the sterilization process.

Cyberlibrary; Office Suite; Breakroom

- Staff read, work on laptops, or meet to talk in the cyberlibrary outside of the laboratory areas.
- Typical office suite in Building 33.
- Because food or drink is not allowed in the laboratories, special breakrooms offer designated areas where staff can eat and drink.

Building Exterior

- Photos of the exterior of the building from various angles

Note: All of the footage on this tape is in the public domain

For more information, contact the
NIAID News and Public Information Branch
301-402-1663